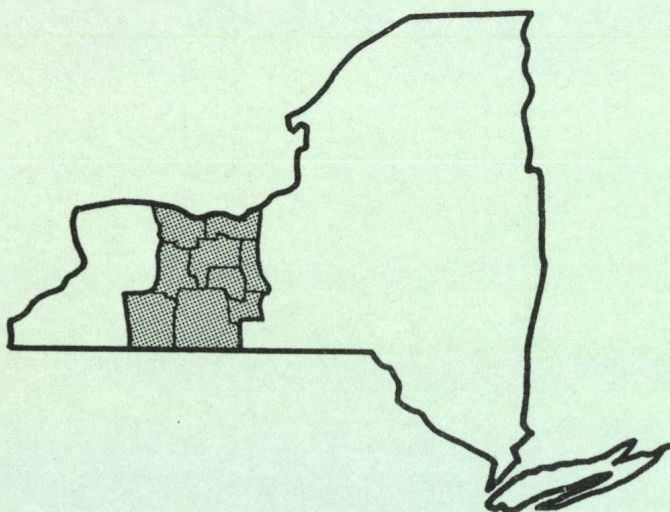


# Forest Statistics for **NEW YORK** Forest District No. 4



Forest Statistics Series:  
New York No. 5

Northeastern Forest Experiment Station

Upper Darby, Pennsylvania  
Ralph W. Marquis, Director

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United States Department of Agriculture • Forest Service

## FOREWORD

This is the fifth in a series of reports about forest areas and timber volumes in the State of New York. These reports are products of the forest survey of the Northeast, carried on by the Northeastern Forest Experiment Station as part of the nationwide forest survey being made by the Forest Service, U. S. Department of Agriculture.

A similar report has been prepared for each of the other forest districts in the State of New York. The primary purpose of these reports is to provide basic forest statistics for the administrative use of the New York Department of Conservation.

The New York Department of Conservation aided the Northeastern Station greatly in the forest survey of the State. The Department not only provided the aerial photographs used in the survey, but also cooperated in many other phases of the work.

Field work in Forest District No. 4 was supervised by Harry W. Camp, Jr. The statistical procedures for obtaining field-inventory data were developed by C. Allen Bickford. Computations were made under the supervision of Roland H. Ferguson.

*Ralph W. Marquis*

Ralph W. Marquis  
Director

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FOREST STATISTICS FOR  
NEW YORK FOREST DISTRICT NO. 4

Prepared by

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GENERAL

Forest District No. 4 comprises nine counties located in the western part of New York State: Allegany, Livingston, Monroe, Ontario, Schuyler, Seneca, Steuben, Wayne, and Yates. It extends from Lake Ontario southward to the Pennsylvania border and includes the western part of the Finger Lakes region.

More than half of the forest land in the District is drained by the Genesee and Oswego Rivers and other tributaries of Lake Ontario. Some 38 percent drains into the upper Susquehanna River, and the remainder lies in the Allegheny River watershed.

Orchard and truck-farming are important activities in the northern part of the District, along the flat Lake Ontario Plain. Elsewhere dairying is more important.

Elevations range from 250 feet above sea level at Lake Ontario to more than 2,200 feet. In general the elevations and steepness increase as one goes from Lake Ontario southward.

### *Forest Area*

The total land area of Forest District No. 4 is nearly 4 million acres. Less than 30 percent of this acreage is forest land.

Of the forest land, 2,000 acres in State Parks<sup>1</sup> are reserved from commercial timber cutting. The rest of the forested area (1,070,400 acres) is commercial forest land.

The most extensively forested county is Steuben, with more than 40 percent of its total land area in commercial forests. Allegany and Steuben Counties together contain more than half of the commercial forest area in the District. Monroe County has the smallest percentage of its area in commercial forest, only 8 percent.

### *Ownership*

Eighty-seven percent of the commercial forest land in Forest District No. 4 is privately owned. This acreage is divided nearly evenly between farmers and other private owners, including estates, railroads, and utility companies.

Most of the 140,000 acres of publicly owned commercial forest land in the District are held by the State of New York as State Forests and Game Management Areas. Federal defense agencies administer about 16,000 acres and the counties and municipalities about 8,000 acres.

### *Forest Types*

Sugar maple-beech-yellow birch is the most important forest cover type in the District. It occupies 34 percent of the commercial forest area and includes 43 percent of all poletimber and sawtimber stands. Next in importance are the red oak and white oak types; combined they account for 21 percent of the commercial forest area and 25 percent of the poletimber and sawtimber stand areas.

Nearly 20 percent of the commercial forest land is occupied by aspen, but this type occupies only 8 percent of the poletimber and sawtimber area. All softwood types account for only 6 percent of the commercial forest area. The

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<sup>1</sup> RECREATIONAL AREAS OUTSIDE THE ADIRONDACK AND CATSKILL PARKS.



remainder is in possession of ash-elm-maple, and other hardwood types.

#### *Forest Stands*

Only 28 percent of the commercial forest area is in sawtimber stands, and less than 9 percent is classed as heavy sawtimber (5,000 or more board feet per acre).

A large portion of the commercial forest area, 42 percent, is in poletimber stands. This leaves 30 percent that is either stocked with trees of sapling size and smaller, or is nonstocked. The large acreage in seedling-and-sapling stands and nonstocked areas is undoubtedly due in part to rather recent abandonment of farm land.

#### *Timber Volume*

There are nearly 2 billion board feet (log scale, International  $\frac{1}{4}$ -inch rule) of live sawtimber on commercial forest land in the District. One-third of this volume is located in heavy sawtimber stands (5,000 or more board feet per acre) and another third in light sawtimber stands (1,500 to 5,000 board feet per acre).

Sugar maple, red oak, and white oak are the most important sawtimber species, and combined they make up 35 percent of the total sawtimber volume. Elm, while not so heavily utilized, has a greater board-foot volume than any other single species, accounting for nearly 20 percent of the total. Softwoods make up only 8 percent of the sawtimber volume. The remaining 37 percent is composed of red maple, beech, basswood, ash, hickory, and other hardwoods.

Growing stock totals 814 million cubic feet. Slightly more than one-half of this volume is in poletimber trees.

All the growing stock is equivalent to a little more than 10 million rough standard cords. More than three-fourths of the growing stock is in trees less than 15 inches d.b.h. (diameter breast high).

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Table 1.--Land area by major classes, 1950

Class of land <sup>1</sup>	Area	
	<u>Acres</u>	<u>Percent</u>
Forest land:		
Commercial	1,070,400	28
Noncommercial <sup>2</sup>	900	(3/)
All forest land	1,071,300	28
Nonforest land	2,786,600	72
All land <sup>4</sup>	3,857,900	100

<sup>1</sup>See Appendix for definitions.

<sup>2</sup>This entire acreage is in State Parks reserved from timber cutting. State ownership figures are as of September 30, 1952.

<sup>3</sup>Less than 1 percent.

<sup>4</sup>Census of Agriculture, 1950. Water areas of 1 to 40 acres are included in the estimate of nonforest acreage.

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Table 2.--Land area and commercial forest-  
land area by county, 1950

County	Land area	Commercial forest- land area	
	<u>Acres</u>	<u>Acres</u>	<u>Percent</u>
Allegheny	670,700	244,400	36
Livingston	408,300	64,200	16
Monroe	430,700	34,100	8
Ontario	415,400	77,000	19
Schuyler	211,800	80,000	38
Seneca	211,200	26,500	13
Steuben	901,100	367,200	41
Wayne	388,500	112,500	29
Yates	220,200	64,500	29
All	3,857,900	1,070,400	28



NEW YORK FOREST DISTRICT NO. 4

Table 3.--Commercial forest-land area  
by ownership, 1950

Ownership class	Acreage held	
	<u>Acres</u>	<u>Percent</u>
Private:		
Farm forest land <sup>1</sup>	460,000	43
Other private	468,600	44
Total private	928,600	87
Public:		
State <sup>2</sup>	115,900	11
Federal <sup>3</sup>	16,000	2
Municipal <sup>4</sup>	6,700	(5/)
County	3,200	(5/)
Total public	141,800	13
All ownerships	1,070,400	100

<sup>1</sup>Census of Agriculture, 1950.

<sup>2</sup>Includes commercial forest land administered by the New York State Conservation Department as State Forests and Game Management Areas, amounting to 80,806.58 and 35,140.69 acres respectively. All State ownership figures are as of September 30, 1952.

<sup>3</sup>Includes 7,100 acres administered by U. S. defense agencies, 6,100 acres administered by the Soil Conservation Service, and 2,800 acres administered by the Fish and Wildlife Service.

<sup>4</sup>Includes 5,400 acres owned by the City of Rochester.

<sup>5</sup>Less than 1 percent.

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Table 4.--Commercial forest-land area  
by forest type, 1950

Forest type	Area	
	Acres	Percent
White pine	23,100	2
White pine-hardwood	17,800	2
Hemlock	16,200	2
Sugar maple-beech	366,200	34
Aspen	210,700	19
Ash-elm-maple	160,000	15
Red oak	142,000	13
White oak	82,100	8
Chestnut oak	28,900	3
Other hardwood types	23,400	2
All types	1,070,400	100

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Table 5.--Commercial forest-land area by forest-type group  
and stand-size class, 1950

Forest-type group	Saw- timber stands	Pole- timber stands	Seedling-and- sapling stands and other areas	Total area
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Softwood types	13,000	23,000	21,100	57,100
Sugar maple-beech	123,400	196,900	45,900	366,200
Oak types <sup>1</sup>	84,600	102,300	37,200	224,100
Other hardwood types	75,600	126,800	220,600	423,000
All types	296,600	449,000	324,800	1,070,400
Percent	28	42	30	100

<sup>1</sup>Excluding the chestnut oak forest type.

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Table 6.--Commercial forest-land area by stand-size  
class and watershed, 1950

Stand-size class	Watershed			Total
	Allegheny River	Lake Ontario tributaries	Susquehanna River	
	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>	<u>Acres</u>
Sawtimber stands:				
More than 5,000 board feet per acre	4,700	65,500	20,800	91,000
1,500 to 5,000 board feet per acre	19,100	135,600	50,900	205,600
Poletimber stands:				
More than 600 cubic feet per acre	25,800	123,200	113,000	262,000
200 to 600 cubic feet per acre	21,000	92,300	73,700	187,000
Other <sup>1</sup>	8,600	170,400	145,800	324,800
Total	79,200	587,000	404,200	1,070,400
Percent	7	55	38	100

<sup>1</sup>Includes seedling-and-sapling stands (276,200 acres) and nonstocked areas (48,600 acres).

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Table 7.--Net volume of live timber on commercial forest land by species, 1950

Species	Growing stock <sup>1</sup>		Saw-timber <sup>2</sup>
	<u>Thousand cu.ft.</u>	<u>Equivalent in cords</u>	<u>Thousand bd.ft.</u>
White pine	37,600	470,000	113,700
Hemlock	24,800	310,000	46,000
Other softwoods	1,800	22,500	1,300
All softwoods	64,200	802,500	161,000
Elm	99,300	1,241,200	389,400
Sugar maple	127,500	1,593,700	261,400
Red oak	81,900	1,023,800	222,500
White oak	63,600	795,000	216,200
Red maple	75,700	946,200	142,200
Beech	52,400	655,000	111,000
Basswood	63,000	787,500	108,100
Ash	41,600	520,000	77,000
Hickory	31,800	397,500	70,000
Aspen	38,800	485,000	50,700
Yellow-poplar	6,000	75,000	35,400
Chestnut oak	14,300	178,000	16,900
Other hardwoods	53,900	673,800	104,700
All hardwoods	749,800	9,372,500	1,805,500
All species <sup>3</sup>	814,000	10,175,000	1,966,500

<sup>1</sup>Includes sawtimber. Cord equivalent in rough stand-ard cords is assumed to average 80 cubic feet of peeled wood.

<sup>2</sup>Log scale, International  $\frac{1}{4}$ -inch rule.

<sup>3</sup>Excludes the net volume of cull trees--10,900,000 cubic feet.

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Table 8.--Net volume of live timber on commercial  
forest land by diameter class, 1950

Diameter class <sup>1</sup> (in inches at breast height)	Growing stock	Saw- timber
	<u>Thousand cu. ft.</u>	<u>Thousand bd. ft.</u>
Softwoods:		
6	12,900	--
8	14,000	--
10	8,000	28,100
12	8,400	35,700
14	8,100	36,400
16	7,200	34,600
18 +	5,600	26,200
All softwoods	64,200	161,000
Hardwoods:		
6	118,600	--
8	141,000	--
10	144,800	--
12	93,000	405,200
14	81,300	410,900
16	59,100	319,900
18	36,800	195,700
20	14,200	86,000
22	16,700	104,900
24	9,900	61,500
26	13,600	83,100
28	9,800	60,600
30 +	11,000	77,700
All hardwoods	749,800	1,805,500
Total	814,000	1,966,500

<sup>1</sup> The midpoint of each 2-inch diameter class is indicated.



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Table 9.--Net volume of live timber on commercial forest  
land by forest type, 1950

Forest type	Growing stock		Saw- timber
	<u>Thousand cu.ft.</u>	<u>Equivalent in cords</u>	<u>Thousand bd.ft.</u>
Softwood types	40,800	510,000	76,900
Sugar maple-beech	344,600	4,307,500	703,000
Aspen	74,100	926,200	124,600
Ash-elm-maple	131,300	1,641,300	481,700
Red oak	122,100	1,526,300	304,300
White oak	64,500	806,200	215,600
Other hardwood types	36,600	457,500	60,400
All types	814,000	10,175,000	1,966,500

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Table 10.--Average net volume of live timber per acre  
of commercial forest land, by  
stand-size class, 1950

Stand-size class (and acreage of each class)	Growing stock	Saw- timber
	<u>Cubic feet</u>	<u>Board feet</u>
Sawtimber stands:		
More than 5,000 bd.ft. per acre (91,000 acres)	1,640	7,610
1,500 to 5,000 bd.ft. per acre (205,600 acres)	1,110	3,270
Poletimber stands:		
More than 600 cu.ft. per acre (262,000 acres)	1,010	1,390
200 to 600 cu.ft. per acre (187,000 acres)	440	430
Other <sup>1</sup> (324,800 acres)	280	480
Average, all classes <sup>2</sup> (1,070,400 acres)	760	1,840

<sup>1</sup>Includes seedling-and-sapling stands and non-stocked areas.

<sup>2</sup>Hardwoods constitute 92 percent of the total volume. The average cubic volume in all stand-size classes is equivalent to 9.5 cords per acre.

# A P P E N D I X

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## DEFINITIONS OF TERMS

### *Forest Areas*

Forest-land area.--Includes (a) lands that are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which has not been developed for other use; and (c) afforested areas. (Forest tracts of less than 1 acre, isolated strips of timber less than 120 feet wide, and abandoned fields and pastures not yet 10 percent stocked are excluded.)

Commercial forest-land area.--Forest land that is (a) producing, or physically capable of producing, usable crops of wood (usually sawtimber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest-land area.--Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land, and (b) incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions.

### *Forest Types*

Forest types are classified according to the species or species group that accounts for the major portion of the stand in terms of cubic feet in sawtimber and poletimber stands, or the number of stems in seedling-and-sapling stands.

### *Stand-Size Classes*

Sawtimber stands.--Stands with sawtimber trees having a minimum net volume per acre of 1,500 board feet, International  $\frac{1}{4}$ -inch rule.

Poletimber stands.--Stands failing to meet the sawtimber stand specification, but at least 10 percent stocked with poletimber and larger (5.0 inches and larger) trees, and with at least half the minimum stocking in poletimber trees. (Poletimber stands carry at least 200 cubic feet per acre.)

Seedling-and-sapling stands.--Stands not qualifying as either sawtimber or poletimber stands, but having at least 10 percent stocking of trees of commercial species and with at least half the minimum stocking in seedling-and-sapling trees.

Other areas.--Forest-land areas not qualifying as sawtimber, poletimber, or seedling-and-sapling stands. (Includes nonstocked areas.)

### *Tree Classes*

Sawtimber trees.--Trees of commercial species that contain at least one merchantable sawlog as defined by regional practice and that are of the following minimum diameters at breast height (d.b.h.): Softwoods 9.0 inches and hardwoods 11.0 inches. (All butt sawlogs are considered merchantable. Where the butt is defective, upper sawlogs are considered merchantable if they account--in terms of aggregate net volume--for 50 percent or more of the gross volume below the top of the uppermost sawlog. Softwood sawlogs are at least 6.0 inches in diameter inside bark at small end; 8 to 16 feet in length; sound and straight enough to be manufactured into standard lumber. The smaller logs are generally free of surface defects other than small tight knots. Hardwood sawlogs are at least 8.0 inches in diameter inside bark at small end; 8 to 16 feet in length; suitable for sawing into standard lumber, construction timbers, or ties.)

Poletimber trees.--Trees 5.0 inches d.b.h. and larger of commercial species that do not meet the specifications for sawtimber trees but do meet regional specifications of species, soundness, and freedom from defect. (These are the trees that are straight and clear enough to make sawtimber trees eventually.)

Seedling-and-sapling trees.--Trees of commercial species less than 5.0 inches in diameter at breast height.

Cull trees.--Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species.

#### *Timber Volume*

Growing stock.--Net volume, in cubic feet, of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

This volume is also given in rough standard cords (bark included). Cord volume is derived from growing stock by applying a factor of 80 cubic feet per cord.

Live sawtimber volume.--Net volume in board feet, International  $\frac{1}{4}$ -inch rule, of live sawtimber trees.

### FOREST - SURVEY METHODS

These forest statistics are based on information gathered from aerial photographs and from sample plots examined on the ground.

First, photo-interpretation plots were marked off on the aerial photographs. These plots were distributed uniformly by mechanical means over photographs of the entire district. Trained photo-interpreters then classified each photo-plot as either forest or nonforest. Forest plots were classified further according to stand-size and forest type.

Field crews inspected some of the photo-plots on the ground. Enough plots were selected at random so as to attain a specified level of statistical accuracy. Species and volume data were collected on these ground plots; and the photo classification of stand size and forest type was verified or--if necessary--changed.

The survey was designed for maximum efficiency in estimating total cubic volume to meet the national standards of accuracy.

### ACCURACY OF THE ESTIMATES

The estimates in this report may contain two kinds of error. First, photo-interpreters may make mistakes of judgment and fieldmen may make mistakes in measuring or record-

ing. There is no practical way of finding out just how often such errors occur. But they are kept to a minimum by closely checking all phases of the work.

The second kind of error is associated with sampling procedures. The size of this sampling error can be measured. In Forest District No. 4 the probabilities are 2 out of 3 that the actual forest area is within  $\pm 9.5$  percent of the estimated forest area, that the actual cubic-foot volume is within  $\pm 5.4$  percent of the estimated cubic-foot volume, and that the actual board-foot volume is within  $\pm 9.2$  percent of the estimated board-foot volume. This does not include any mistakes in measurement or classification.

These percentages show that the area estimates are more accurate than the volume estimates, and that the cubic-foot estimates are more accurate than the board-foot estimates.

In each of the tables, the total figures are more accurate than the subtotals. The subtotals are more accurate than any of the individual figures. Figures that are small in relation to totals are subject to larger sampling errors.

#### S P E C I E S   T A L L I E D

The various commercial tree species tallied in New York Forest District No. 4 are listed below. Approved common names<sup>2</sup> are shown in parentheses if these differ from the brief name used in the tables. Other tree species may occur in the area, but unless they were tallied on the field plots they were not included in the following list.

##### *Softwoods*

White pine (Eastern white pine)	- <u>Pinus strobus</u>
(Red pine)	- <u>Pinus resinosa</u>
Hemlock (Eastern hemlock)	- <u>Tsuga canadensis</u>
Other softwoods	
(Red spruce)	- <u>Picea rubens</u>
(Balsam fir)	- <u>Abies balsamea</u>
(Pitch pine)	- <u>Pinus rigida</u>

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<sup>2</sup> LITTLE, ELBERT L., JR. CHECK LIST OF NATIVE AND NATURALIZED TREES OF THE UNITED STATES (INCLUDING ALASKA). U. S. DEPT. AGR. AGR. HANDB. 41. 472 PP. 1953.



### Hardwoods

Elm	- <u>Ulmus</u> species
Sugar maple	- <u>Acer saccharum</u>
Red oak (Northern red oak)	- <u>Quercus rubra</u>
(Black oak)	- <u>Quercus velutina</u>
White oak	- <u>Quercus alba</u>
Red maple	- <u>Acer rubrum</u>
Beech (Amercian beech)	- <u>Fagus grandifolia</u>
Basswood (American basswood)	- <u>Tilia americana</u>
Ash	- <u>Fraxinus</u> species
Hickory	- <u>Carya</u> species
Aspen (Bigtooth aspen)	- <u>Populus grandidentata</u>
(Quaking aspen)	- <u>Populus tremuloides</u>
Yellow-poplar	- <u>Liriodendron tulipifera</u>
Chestnut oak	- <u>Quercus prinus</u>
Other hardwoods	
(Yellow birch)	- <u>Betula alleghaniensis</u>
(Paper birch)	- <u>Betula papyrifera</u>
(Black cherry)	- <u>Prunus serotina</u>
(Butternut)	- <u>Juglans cinerea</u>
(Black willow)	- <u>Salix nigra</u>

